CLAIMS

Sub a1

1. An apparatus for use in a switch array having spring elements, the apparatus comprising:

a bottom layer defining holes for aligning with spring elements; and

a top layer engaged with the bottom layer and biased away from the bottom layer upon protrusion of the spring elements through the holes in the bottom layer.

2. The apparatus of claim 1, wherein the top layer includes a plurality of top layer sections, and each of the top layer sections directs user actuated force against one of the spring elements.

3. The apparatus of claim 2, wherein the switch array is a keyboard.

4. The apparatus of claim 3, wherein each of the top layer sections is aligned with one of a plurality of keys in the keyboard.

5. The apparatus of claim 1, wherein the bottom layer and top layer define sets of hook-like elements that engage one another to define a distance of travel between the bottom layer and the top layer.

6. The apparatus of claim 5, wherein the top layer defines a plurality of top layer sections, and each of the top layer sections defines a set of hook-like elements for engagement with hook-like elements of the bottom layer.

7. The apparatus of claim 6, wherein the top and bottom layers are films, and the hook-like elements are formed on the films.

8. The apparatus of claim 6, wherein the bottom layer is formed with regions defining areas for placement of the top layer sections.

9. The apparatus of claim 1, wherein the holes in the bottom layers are arranged to align with spring elements in the form of dome spring elements.

10. The apparatus of claim 1, wherein the holes are sized in the range of 0.1 to 2 square centimeters.

11. The apparatus of claim 5, wherein the hook-like elements have a hook element width in the range of 0.01 centimeters to 1 centimeter.

12. The apparatus of claim 5, wherein the distance of travel is less than 3 millimeters.

13. The apparatus of claim 12, wherein the distance of travel is less than 2 millimeters.

14. The apparatus of claim 5, wherein the distance of travel is in the range of 0.01 to 1 centimeters.

15. The apparatus of claim 5, wherein the hook-like elements have a hook element height in the range of 0.05 to 1 centimeters.

16. The apparatus of claim 1, wherein the top layer includes substantially rigid elements and elastic regions between the rigid elements, each of the rigid elements being biased by one of the spring elements upon protrusion of the spring element through one of the holes.

17. The apparatus of claim 16, wherein the rigid elements comprise keys.

18. A keyboard comprising:

an array of sensor elements that generate signals in response to a force;

an array of spring elements corresponding to the array of sensor elements;

a bottom layer defining holes for aligning with spring elements; and

a top layer engaged with the bottom layer and biased away from the bottom layer upon protrusion of the spring elements through the holes in the bottom layer.

19. The keyboard of claim 18, wherein the array of spring elements is an array of dome spring elements, wherein each of the dome spring elements defines a chamber, and wherein a plurality of channels interconnect the chambers of the dome spring elements such that each the chamber of each dome spring element is in fluid communication with the chamber of at least one of the other dome spring elements.

20. The keyboard of claim 18, wherein the bottom layer and top layer define sets of hook-like elements that engage one another to limit a distance of travel between the bottom layer and the top layer.

21. The keyboard of claim 20, wherein the top layer defines a plurality of top layer sections, and each of the top layer sections defines a set of hook-like elements for engagement with hook-like elements of the bottom layer.

22. The keyboard of claim 21, wherein each of the top layer sections is a key.

23. The keyboard of claim 18, wherein the top layer includes substantially rigid elements and elastic regions between the rigid elements, each of the rigid elements being biased by one of the spring elements upon protrusion of the spring element through one of the holes.

24. The keyboard of claim 23, wherein the rigid elements comprise keys.

25. The keyboard of claim 18, wherein the top and bottom layers are films.

26. The keyboard of claim 18, further comprising keycaps attached to the top layer.

27. The keyboard of claim 18, wherein the array of spring elements are attached to the top layer.

28. The keyboard of claim 21, wherein the bottom layer is formed with regions defining areas for placement of the top layer sections.

29. A system comprising:

a processor coupled to an input device, the input device including an array of sensor elements that generate signals in response to a force, and an array of spring elements corresponding to the sensor elements,

the input device further including a bottom layer defining holes for aligning with spring elements and a top layer engaged with the bottom layer and biased away from the bottom layer upon protrusion of the spring elements through the holes in the bottom layer.

30. The system of claim 29, wherein the array of spring elements is an array of dome spring elements, wherein each of the dome spring elements defines a chamber, and

wherein a plurality of channels interconnect the chambers of the dome spring elements such that the chamber of each dome spring element is in fluid communication with the chamber of at least one of the other dome spring elements.

31. The system of claim 29, wherein the bottom layer and top layer define sets of hook-like elements that engage one another to limit a distance of travel between the bottom layer and the top layer.

32. The system of claim 31, wherein the top layer defines a plurality of top layer sections, and each of the top layer sections defines a set of hook-like elements for engagement with hook-like elements of the bottom layer.

33. The system of claim 32, wherein the bottom layer is formed with regions defining areas for placement of the top layer sections.

34. The system of claim 32, wherein each of the top layer sections is a key.

35. The system of claim 29, wherein the top layer includes substantially rigid elements and elastic regions between the rigid elements, each of the rigid elements being biased by one of the spring elements upon protrusion of the spring element through one of the holes.

36. The system of claim 35, wherein the rigid elements comprise keys.

37. The system of claim 29, wherein the top and bottom layers are hook films including hook-like elements that provide an interlocking arrangement between the top and bottom layers.

38. The system of claim 29, further comprising keycaps attached to the top layer.

39. The system of claim 29, wherein the system is a desktop computer and the input device is a keyboard.

40. The system of claim 29, wherein the system is a laptop computer and the input device is a keyboard on the laptop computer.

41. The system of claim 29, wherein the system is a handheld computer and the input device is a key pad on the handheld computer.

42. The system of claim 29, wherein the system is a cellular telephone and the input device is a key pad on the cellular telephone.

43. The system of claim 29, wherein the system includes an instrument panel and the input device is a key pad on the instrument panel.

44. The system of claim 29, wherein the system is an appliance and the input device is a key pad on the appliance.

45. The system of claim 29, wherein the array of spring elements are attached to the top layer.

46. An apparatus comprising:

a bottom layer,

a top layer, and

means for engaging the top and bottom layer such that upon engagement, an amount of travel is defined between the top and bottom layers.

47. The apparatus of claim 46, wherein the means for engaging includes a plurality of hook-like elements.

48. An apparatus comprising:

a first layer including a first set of hook-like elements,

a second layer including a second set of hook-like elements, wherein the first and second sets of hook-like elements are engaged, thereby attaching the first layer to the second layer.

49. The apparatus of claim 48, wherein the engaged sets of hook-like elements collectively define a distance of travel between the first and second layers.

50. The apparatus of claim 48, wherein the distance of travel is in the range of 0.05 centimeters to 1 centimeter.

51. The apparatus of claim 48, further comprising a spring element biasing the first and second layers away from one another.